

# Climate Change Risks and Opportunities

GSM 415-001

Summer 2019

Professor: Emilie Mazzacurati, MPP  
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Office hours: July 14 and 21, 3-4pm and by appointment.

Course overview: The objective of this course is to provide a working knowledge of the risks and opportunities arising from climate change and climate policy for corporations and investors. We will examine how carbon prices, physical impacts of climate change, and climate policy affect companies, and the tools and strategies to manage these risks and lower business contributions to climate change. The course has a practical focus and will use real-world case studies to highlight different market and regulatory approaches and feature recent developments in investor and market expectations and best practices.

## Learning objectives:

Upon completion of this course, students will be able to:

- Understand recent developments in climate science and climate policy
- Understand projected impacts on the economy, on corporations and on markets
- Analyze potential exposure to climate risk in its various forms: physical, transition, and liability risk
- Understand shifting expectations from investors, consumers, and regulators

Course structure: this course is structured in four modules and will include a mix of lectures, case studies and hands-on exercises.

Pre-requisite: basic knowledge of economics and business

Evaluation and grading: Letter.

Grades will be determined as follows:

- Participation to class discussion: 20%
- Group assignment and presentations: 40%
- Individual paper: 40%

## Module 1: Climate Change & Business – July 14, 2019 (am)

- Climate science 101
- Climate change: a moral imperative?
- Climate change: a systemic financial risk?

### Required readings:

- [\*What We Know: the Reality: Risks and Response to Climate Change\*](#), American Association for the Advancement of Science, 2014
- UNFCCC. 2018. [\*IPCC Special Report on Global Warming of 1.5 °C\*](#)
- Eric Roston, Bloomberg. 2017. [\*How a Melting Arctic Changes Everything\*](#).
- Dan Ariely. 2012. “[\*Human Behavior vs Climate Crisis \(part 1\)\*](#)” [Video]. (Optional: [Part 2](#) and [Part 3](#))
- Watch: Mark Carney speech to Lloyd’s on the [\*Tragedy of the Horizon\*](#) [Video]

## Module 2: Regulatory Risks & Opportunities: Carbon Regulation – July 14, 2019 (pm)

- Measuring carbon emissions
- Climate policy: California, the U.S. and beyond
- Stranded assets and transition risks to the economy

### Required readings:

[\*Wasted Capital and Unburnable Assets\*](#), Carbon Tracker Initiative, 2013  
World Bank [\*State and Trends of Carbon Pricing 2018\*](#)  
Financial Stability Board. 2017. [\*Taskforce on Climate-related Financial Disclosures Recommendations Guide for Responsible Corporate Engagement in Climate Policy\*](#), A Caring for Climate Report by the UN Global Compact, UNFCCC, and UNEP, in cooperation with WRI, CDP, WWF, Ceres and The Climate Group.

Constitute teams for group assignment.

## Module 3: Physical Climate Risk in corporate value chains and financial markets – July 21, 2019 (am)

Student presentations (group assignment)

- Assessing risk and vulnerability in the value chain
- Changes to customer perception, expectations, and needs
- Managing investors’ expectations

### Required readings:

EBRD. 2018. [\*Advancing TCFD Guidance on Physical Climate Risks and Opportunities\*](#)  
UNEP FI. 2018. [\*Navigating a New Climate\*](#).  
Blackrock. 2019. [\*Getting Physical: Assessing Climate Risks\*](#)

[\*The Business Case for Responsible Corporate Adaptation\*](#), A Caring for Climate by the UN Global Compact, UNFCCC, and UNEP, in cooperation with WRI, CDP, ND-GAIN, PwC, and Four Twenty Seven. December 2015. (Read Introduction, Chap. 1-2 and 4, and 2 case studies of your choice)

#### **Module 4: Liability Risk: Who's At Risk? – July 21, 2019 (pm)**

- The landscape of climate lawsuits
- Can companies manage liability risk?
- Fiduciary duty and climate change

Reading:

Vox, February 22, 2019. [Pay attention to the growing wave of climate change lawsuits](#)

UN Environment. Burger, Michael and Gundlach, Justin. April 2017. [The Status of Climate Change Litigation: A Global Review](#),

Dow Jones Newswires. 2018. [California Municipalities' Debt Disclosures Contrast With Climate Warnings](#)

PRI. 2015. [The Changing Landscape of Fiduciary Duty](#) (executive summary)

Barrons. 2019. [Trump Is Pushing for a Review of How Pensions Use ESG Metrics](#)

Assignment description:

**Readings (20%):** Read through reports, come prepared to discuss at the beginning of each module.

**Group Assignment (40%):** to be discussed in class.

**Take-home Assignment (40%):**

Option #1: Pick a large, publicly-listed company of your choice (preferable S&P 200). Please choose a different company than the ones we studied in class. Research its products, operations, supply chain and markets, and analyze its key potential risks and opportunities in the value chain related to transition, physical and liability.

Write a brief memo (6-8 p, 1.5 space) to your company's Corporate Risk Officer to discuss what your company's strategy should be with regard to climate change risks and to disclosures of climate-related risks.

Option #2: write a 6-8 pp (1.5 space) paper on a topic of your choice directly relevant to the class's topic and discussion. Topic needs to be approved by instructor first.

Papers are due two weeks after the last session.

**About the instructor:**

Emilie Mazzacurati is the founder and CEO of Four Twenty Seven (427mt.com), the leading provider of market intelligence on the impacts of climate change for financial markets. Four Twenty Seven provides climate risk screening for listed securities and real assets to help financial institutions, corporations, and governments understand their exposure to the physical impacts of climate change and build resilience.

Emilie has received multiple awards for her work as a thought-leader and social entrepreneur. She has published extensively on the impacts of climate change in financial markets, on climate risks disclosure (TCFD), and on adaptation finance opportunities. She also served as on the state of California's Technical Advisory Group for the implementation of Governor Brown's Executive Order on climate change (EO B-30-15) and teaches at the University of California, Davis Executive MBA on Business & Climate Change.

Previously, Emilie was Head of Research at Thomson Reuters Point Carbon, where she directed research and modeling on carbon pricing. She also served as a policy advisor to the Mayor of Paris on environmental policy. Emilie holds a Master's of Political Science from the Institut d'Etudes Politiques de Paris and a Master's of Public Policy from UC Berkeley.

Emilie is the recipient of multiple awards, including Top 100 People in Finance (2019), Berkeley Visionary Award (2016), and Cartier Women's Initiative Award (2013). Four Twenty Seven was named 2019 Best Alternative Data Provider by Risk Magazine.

For more details see [www.427mt.com](http://www.427mt.com)

Code of Academic Conduct: <http://sja.ucdavis.edu/files/cac.pdf>